

CLAIMS

1. Starting circuit (13) for switching power supplies having a first supply voltage (V_{in}) coming from a first terminal and a second supply voltage (V_{cc}) coming from a second terminal and a third terminal (30); said starting circuit comprising: a first current path between said first terminal and said third terminal (30); a second current path between said third terminal (30) and said second terminal; a third current path between said second terminal and said third terminal (30), characterized by further comprising a two-way voltage regulator (M3, Dz2, R5, R6) placed between said second terminal and said third terminal (30), able to supply said first supply voltage (V_{in}) to said second terminal through said first and second current path at the switching on of said switching power supply and to supply said second supply voltage (V_{cc}) to said third terminal (30) through said third current path when said second supply voltage (V_{cc}) is increased.
- 15 2. Starting circuit for switching power supplies according to claim 1, characterized in that said two-way voltage regulator (M3, Dz2, R5, R6) comprises a voltage limiting circuit (R5, R6, Dz2) so that said second supply voltage (V_{cc}) supplied to said third terminal (30) is limited to a prefixed voltage.
- 20 3. Starting circuit for switching power supplies according to claim 1, characterized in that said two-way voltage regulator (M3, Dz2, R5, R6) comprises a transistor (M3) having the drain coupled to said second terminal and the source coupled to said first and to said third terminal (30).
- 25 4. Starting circuit for switching power supplies according to claim 3, characterized in that said two-way voltage regulator (M3, Dz2, R5, R6) comprises a preset voltage generator (R5, R6, Dz2) coupled to said transistor (M3) gate.
- 30 5. Starting circuit for switching power supplies according to claim 3, characterized in that said two-way voltage regulator (M3, Dz2, R5, R6) comprises a capacitor (Cf) coupled to said transistor (M3) gate.

6. Starting circuit for switching power supplies according to claim 1, characterized in that said first current path comprises a resistance (Rs).
7. Starting circuit for switching power supplies according to claim 1, characterized in that said first current path comprises a controlled switch (S).
- 5 8. Starting circuit for switching power supplies according to claim 1, characterized in that said controlled switch (S) is closed when said second supply voltage (Vcc) is lower than a preset reference voltage value and it is open when said second supply voltage (VCC) is higher than said preset reference value.
- 10 9. Switching power supply comprising a control circuit (11) of said switching power supply; and a starting circuit (13) of said control circuit according to claim 1.
- 15 10. Integrated circuit of a switching power supply comprising a control circuit of said switching power supply; and a starting circuit (13) according to claim 1 able to sustain said second supply voltage (Vcc) greater than 40 V, more preferably greater than 80 V, and preferably even greater than 160 V.